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XXXVI. EXPERIMENTS ON A POSSIBLE TEST OF AESTHETIC JUDGMENT  
OF PICTURES

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The following study represents a preliminary exploration of one part of the field mentioned in the title. The materials used were thirty-six Cosmos prints in black and white of the following pictures:

1. Holbein: The Ambassadors.
2. Thorn: Song Without Words.
3. Ruysdael: Forest of Oaks.
4. Delobbe: Noonday Rest.
5. Holbein: Madonna of the Meyer Family.
6. Berne-Bellecour: The Intended.
7. Haquette: Departure of the Fishing Boat.
8. Hofmann: Jesus and the Woman of Samaria.
9. Alma Tadema: Sappho.
10. Naujok: St. Cecilia.
11. Millet: The Gleaners.
12. Plockhorst: Christ Blessing Little Children.
13. Mauve: Sheep, Spring.
14. Knaus: Holy Family.
15. Dicksee: Young Handel.
16. Gardner: David the Shepherd.
17. Holman Hunt: The Shadow of the Cross.
18. da Vinci: The Virgin of the Rocks.
19. Raffaelino: Madonna with Angelic Choir.
20. Turner: The Fighting Temeraire.
21. Piglhein: Star of Bethlehem.
22. Murillo: Children of the Shell.
23. Piloty: Thusnelda.
24. Frise: Reconnaissance by Lions.
25. Del Sarto: Madonna of the Harpies.
26. Del Sarto: Entombment.
27. Murillo: Madonna.
28. Ver Meer: Young Lady with Pearl Necklace.
29. Holmes: Kiss Me.
30. Boughton: Two Farewells.
31. Douglas: Jersey.
32. 'de Hooch: Dutch Interior.
33. Haquette: The Return to the Port.
34. Aubert: Cupid's Convention.
35. Thumann: The Fates.
36. Gardner: An Improvised Cup.

These pictures were chosen to represent as wide a range as possible, from the sentimentally popular to the technically great. The titles and the names of the artists were removed from the pictures before they were used. They were then put into the hands of the three experts in the Vassar department of art, Messrs. O. S. Tonks, A. E.

Bye, and Clarence K. Chatterton. These gentlemen, for whose cooperation we wish to express our thanks, were asked to arrange the pictures in the order in which they would choose to own the originals (the financial value of course being left out of account). From the ranks which these three authorities assigned a picture the average rank of that picture according to expert judgment was computed; and thus a combined ranking, the standard ranking, was obtained for the whole series of thirty-six. The order, beginning with the highest, of the pictures in this standard ranking was as follows: 11 and 28 (equal), 13, 20, 32, 18, 5, 1, 26, 25, 17, 22, 19 and 9 (equal), 3, 27 (here a considerable drop in the average rankings occurred, indicating that the pictures below this point were considered by the experts as markedly inferior to those above it), 23, 6, 14, 24, 12, 15, 10 and 7 (equal), 8, 16, 21, 35, 33, 34, 36, 30, 4, 31, 2, 29. The average deviations of the three experts in their judgments of the rank of a particular picture ranged from 7.8 places down to .4 of a place, and the average of these averages for all the pictures was 3.4 places.

One hundred and forty-four women student observers were now required successively to perform the same experiment; that is, to rank the thirty-six pictures in the order in which they would be, for their own sake, desirable possessions to the observer making the ranking. When each observer had completed her arrangement, she was asked the following four questions: "Have you ever studied drawing or painting? Have you ever studied the history of art? Have you visited many picture galleries? Are you especially interested in pictures?"

The rankings which these one hundred and forty-four observers gave the pictures were treated in two ways. First, a rank-difference correlation was obtained between each observer's rating of the pictures and the expert rating. These correlations varied from  $+.82$  to  $-.42$ ; their average was  $+.19$ , with a mean variation of  $.26$ . Then, secondly, a combined ranking of the pictures for all the one hundred and forty-four observers was obtained, by averaging the ranks assigned by all the observers to one picture, repeating this process for each of the other pictures in turn, and ranking the pictures on the basis of these averages. A rank-difference correlation was then found between this ranking (which we shall call the 144 O. ranking) and the expert ranking. The correlation was found to be  $+.33$ , with a probable error of  $.10$ .

Three small groups were then selected from the total number of observers, seventeen in each group. The first group was composed of observers who answered "yes" to all the questions, and therefore represent those most artistic in training and taste. A combined ranking from Group I showed a rank-difference correlation with the expert ranking of  $+.49$ , probable error  $.09$ . Group II contained the observers who answered "no" to all the questions, and thus might be considered the least artistic. The ranking formed from their combined judgments gave a correlation with the expert ranking of  $-.11$ . Group III contained observers who answered "yes" only to the last question; that is, they were without artistic training of any sort, but were interested in pictures. The correlation of the ranking formed from their combined judgments and the expert ranking was  $+.43$ , nearly as high as that of Group I.

Some interesting points of difference appeared between these three groups as regards the average rank which they assigned to particular pictures. We have seen that the experts placed picture 11 (Millet's *Gleaners*) and picture 28 (ver Meer's *Young Lady with Pearl Neck-*

lace) together at the head of the list; picture 13 (Mauve's Sheep) stood next; picture 29 (Holmes: Kiss Me) was at the foot, and picture 31 (Douglas: Jersey) ranked next but one to the last. Now in the combined ranking of all 144 observers, picture 13 stood at the head and picture 31 at the bottom. Group I (the artistic), also put 13 at the top and 31 at the bottom. Group II (the wholly inartistic), put 13 at the top; but at the bottom they put number 1, Holbein's Ambassadors, which the experts rated as eighth from the top. Group III, the observers who were untrained but interested in pictures, approached more nearly to the experts in putting picture 11 at the top; 31 being at the bottom.

It thus appears (1) that technical training makes the rankings assigned to these thirty-six pictures correlate more closely with the rankings assigned them by experts, which might have been expected; and (2) that a declared interest in pictures, quite apart from any kind of training, has a noticeable effect in producing closer approximation of the judgments to those of experts.

As the results were further studied, it became apparent that the rating given by an individual to one or two pictures out of the thirty-six was of marked significance as showing that individual's agreement with the expert standard. This was noticeably true of picture 28, Ver Meer's Young Lady with Pearl Necklace, which the experts put at the top of the list. This picture has but little literary appeal; its excellence is in a high degree technical. Its rank in the combined 144 O. ranking was 20; the totally inartistic group II placed it as low as 30; the highly artistic group I put it at 12, and the untrained but interested observers of group III again showed the effect of their natural taste by rating it at 16.

Other indications of the diagnostic significance of an observer's reaction to picture 28 were obtained from a study of the indexes of correlation between a given individual's ranking of the pictures and the expert ranking. There were fifty-nine persons who gave either negative correlations or positive correlations less than  $\pm .10$ . The rankings which these persons gave to picture number 28 were well massed beyond twenty: there were eleven who put it at the bottom of the scale and only six who ranked it better than twentieth: the average ranking was 28.3. There were forty-one observers who had positive correlations of over .40; the ranks which these assigned to picture 28 were massed at the upper end, there were only five who ranked it beyond eighteen, and the average ranking was 8.8. Thus a difference of 19.5 places appeared between the average ranking of 28 by the observers whose ranking of the whole series of 36 pictures failed to correlate or correlated negatively with the expert ranking, and the average ranking of 28 by the observers whose ranking of the whole series correlated with the expert ranking by more than  $\pm .40$ . These results may be compared with those for picture 11, Mauve's Sheep, a picture which is attractive in subject as well as in technique. The massing of the rankings of this picture was at the upper end in the case of both the low correlation groups and the high correlation groups; the average ranking for the low correlation group was 6.8, that for the high correlation group 5.3, a difference of only 1.5. In other words, everybody liked this picture.

Further, we looked up the indexes of correlation for the individuals who had assigned rankings from 26 to 36, or the last ten ranks, to picture 28, and found that out of 53 individuals only five, or 9.4%, had correlations of over  $\pm .40$ . Of the 32 individuals who assigned to picture 28 a rank somewhere among the first ten places, there were

only 12, or 32.4%, who had correlations below  $+.40$ . It would seem that assigning a low rank to picture 28 is a better indication of poor artistic judgment than assigning a high rank to this picture is of good artistic judgment.

Finally, another expression for the diagnostic significance of the rank which an observer assigned to picture 28 was sought in the following way. An average was taken of the indexes of correlation obtained between the ranking of the whole series of thirty-six pictures and the expert ranking, for all the observers who assigned rank number 1 to picture 28. A similar average of the coefficients was made for all the observers who assigned rank number 2 to picture 28, and so on for each of the thirty-six ranks that could be assigned to this picture. Of course the number of observers assigning the same rank to picture 28 was not equal for all the ranks; it varied from twelve (for the lowest rank, 36) to one (for ranks 16, 19, and 30), so these averages were not very significant. But if the judgment made on picture 28 were a perfect index of the degree of correlation between an observer's ranking of the thirty-six pictures and the expert ranking, so that one could predict the correlation from the judgment on this one picture, evidently the averages of the indexes for observers who made the same ranking of picture 28 ought, when arranged in numerical order, to follow the order of the ranks assigned to 28. Thus, the average of the correlation indexes of the observers who ranked picture 28 as number 1 ought to be the highest average; that of the observers who ranked picture 28 as number 2 ought to be the next highest, and so on down. A rank difference index of correlation was accordingly found between the thirty-six average indexes and the order 1 to 36, and this coefficient was found, in spite of the inadequacy of the averages, to be  $+.78$ . Thus it would appear that if this series of pictures is used, ranking picture number 28, *ver Meer's Young Lady with Pearl Necklace*, anywhere in the last ten places means in nine cases out of ten low correlation with the expert judgment on all the pictures; ranking it among the first ten places means in two cases out of three high correlation with the expert judgment on all the pictures.